ABSTRACTS IN URGENT CARE

- Pediatric Burns and Cool, Clear Water
- Limit Screen Time After Concussion?
- Gastroenteritis in Children
- Diagnosing Giant Cell Arteritis
- POCUS and Ectopic Pregnancy
- Detecting *C diff*
- Vaccinating Adolescents Against COVID-19

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First Aid for Pediatric Burn Patients

Take-home point: Many children with burns receive inadequate cooling after burns when presenting for emergency care.

Citation: Frear C, Griffin B, Kimble R. Adequacy of cool running water first aid by healthcare professionals in the treatment of pediatric burns: a cross-sectional study of 4537 children. *Emerg Med Australas*. 2021;33(4):615–622.

Relevance: First aid with cool running water (CRW) for patients sustaining burn injuries ensures quicker healing and reduces the need for skin grafting.

Study summary: This was a cross-sectional retrospective study using Queensland, Australia, Pediatric Burns Registry (QPBR) data for children <16 years of age who received emergency treatment after a thermal burn. The QPBR is a prospectively collected database of children presenting to major pediatric burn centers. Families were asked to describe the first aid administered by all parties potentially involved in initial care, including caregivers and/or patients at the scene of the injury, paramedics, family medicine doctors, emergency department staff, and/or children's specialty hospital staff. Types of first aid interventions which were documented included CRW, ice, and damp clothes. The duration of CRW therapy at each level of management was also recorded. Duration of CRW was divided into no CRW, <5 minutes, 5-10 minutes, 11-19 minutes, and >20 minutes.

The authors found that 71.9% of the 4,537 children presenting to the burn center received adequate cooling measures. Caregivers provided adequate cooling in only 33% of cases; 49% of children had inadequate cooling measures initiated; and 6.9% of children received no cooling. Inadequate cooling was corrected in 25% of cases by paramedics, 24% of cases by the family doctor, 53% by providers in the general ED, and 76% of cases by staff at the children's hospital. However, 12% of patients never received appropriate first aid treatment/cooling by any healthcare professional. There were no associations in the multivariable models with sex, ethnicity, anatomical location, or total body surface area and likelihood of appropriate treatment.

Editor's comments: This was a retrospective study relying on family recollections of events surrounding a burn and therefore substantial risk of recall bias exists. ■

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Screen Time and Concussion Recovery

Take-home point: Results of this study suggest that limiting screen time during the initial acute concussion recovery phase may help in shortening duration of symptoms.

Citation: Macnow T, Curran T, Tolliday C, et al. Effect of screen time on recovery from concussion: a randomized clinical trial. *JAMA Pediatr*. 2021;175(11):1124-1131; e212782.

Relevance: Postconcussion care has evolved significantly over the last several years. Screen time has become increasingly prevalent, the effect of which on concussion recovery is uncertain.

Study summary: This was a single-center parallel-design randomized trial among patients who presented to the pediatric and adult EDs of the University of Massachusetts Medical Center within 24 hours of sustaining a concussion. Participants were randomized to one of two groups: one group was permitted to engage in screen time during the first 48 hours of recovery and the second group was asked to abstain from screen time during the same period. Participants completed the Post-Concussive Symptom Scale (PCSS) at the time of enrollment, then daily for the 10-day study duration. The authors used a Cox re-

gression model that included intervention group and sex. Significant findings included that female participants (HR, 0.34; 95%CI, 0.19-0.60) and participants in the group permitted screen time (HR, 0.51; 95% CI, 0.29-0.90) were less likely to recover over the study period compared with male participants and participants in the screen-time-abstinent group. The screen-time-permitted group had a significantly longer median time until recovery compared with the screen-time-abstinent group: 8.0 days vs 3.5 days, respectively (p=0.03).

Editor's comments: This was a single centered study of a convenience sampling of patients. Enrollment was halted early due to COVID-19. However, the results were significant and correspond with prior studies demonstrating females recover less well from concussions than males. Given the ubiquity of screen time, these findings warrant further investigation, but in the meantime, it's reasonable to caution patients about excessive screentime after concussion. ■

Does Oral Ondansetron Really Affect the Course of Pediatric Gastroenteritis?

Take-home point: Oral ondansetron was not associated with a reduction in need for IV fluid administration within 72 hours of hospitalization in children presenting to the ED with acute gastroenteritis (AGE). However, it was associated with reduced need for IV fluids at the index ED visit.

Citation: Powell E, Roskind C, Schnadower D, et al. Oral ondansetron administration in children seeking emergency department care for acute gastroenteritis: a patient-level propensity-matched analysis. *Ann Emerg Med*. 2021 Aug 11; S0196-0644(21)00478-9.

Relevance: This paper investigates the efficacy of oral ondansetron in six clinically relevant outcomes in children with AGE.

Study summary: This was a planned secondary analysis of the Pediatric Emergency Care Applied Research Network (PECARN) probiotic study and the Pediatric Emergency Research Canada (PERC) Probiotic Regimen for Outpatient Gastroenteritis Utility of Treatment (PROGUT) randomized, placebo-controlled trials of probiotics in children who presented for ED care with AGE-associated diarrhea. Ten U.S. and six Canadian institutions participated in the study. Children enrolled ranged from 3 to 48 months of age. All ED care, including use of ondansetron, treatment with oral or intravenous fluids, and hospitalization, was permitted at the discretion of the ED physician/provider.

Study objectives were to determine if oral ondansetron administration was associated with a reduction in intravenous fluid administration or hospitalization at the index visit and within 72 hours, as well as effect on the frequency of vomiting and diarrhea episodes during the 24 hours enrollment. Children administered oral ondansetron were older, had more vomiting episodes in the 24 hours preceding the index visit, and were more likely treated in a U.S.-based ED. Oral ondansetron administration was not associated with any difference in IV fluid administration up to 72 hours after the index visit, hospitalization at index visit, and hospitalization up to and after 72 hours following the index visit. Oral ondansetron was associated with a significantly lower rate of IV fluid administration during the index visit, however (adjusted OR=0.50)

Editor's comments: This was a large observational study from a variety of EDs in the U.S. and Canada. Use of ondansetron was associated with decreased use of IV fluids at the initial ED visit, but not with any improvement in other outcomes, including IV needs and hospitalization at 24 hours. With all of the typical limitations of observational data, this seems to suggest that for more severe cases of AGE, ondansetron is unlikely to change their clinical course and need for subsequent care during their illness. Regardless, ondansetron is well tolerated and was associated with less need for initial fluids, so there seems to be little downside to a trial in urgent care before rushing to IV fluids. ■

Diagnosis of Giant Cell Arteritis

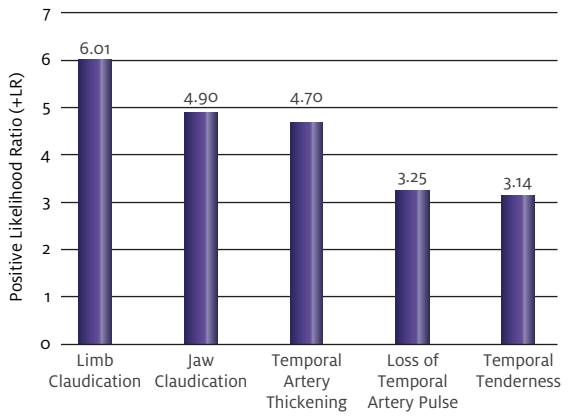
Take-home point: No single clinical or laboratory feature was able to rule in or rule out temporal arteritis/giant cell arteritis (GCA). The diagnosis must be confirmed by performing additional investigations, including vascular imaging and/or temporal artery biopsy.

Citation: van de Greest K, Sandovici M, Brouwer E, et al. Diagnostic accuracy of symptoms, physical signs, and laboratory tests for giant cell arteritis: a systematic review and meta-analysis. *JAMA Intern Med*. 2020;180(10):1295-1304.

Relevance: Understanding the limitations of physical exam and lab studies in patients presenting with symptoms concerning for GCA can help guide urgent care clinicians toward accurate and timely diagnosis of this vision-threatening diagnosis. Knowledge of the value of various studies also helps to prevent inappropriate investigations that add expense and complexity to care.

Study summary: This was a systematic review and meta-analysis of the diagnostic accuracy of symptoms, physical signs, and laboratory tests for the diagnosis of GCA. Studies included met certain inclusion criteria such as consecutive patients with suspected GCA and correlated reference testing such as temporal artery biopsy (TAB) or imaging available. Studies with <10 patients were excluded.

Figure 1. Features Associated with Increased Risk of GCA



Sixty-eight studies fulfilled the selection criteria with a total of 14,037 patients included. Features associated with increased risk of GCA included limb claudication (positive likelihood ratio (+LR) 6.01), jaw claudication (+LR 4.9), temporal artery thickening (+LR 4.7), loss of temporal artery pulse (+LR 3.25), and temporal tenderness (+LR 3.14)(See **Figure 1.**) Significant laboratory findings included platelet count of greater than 400,000 (+LR 3.75), erythrocyte sedimentation rate (ESR) >100 mm/hr (+LR 3.11). Features considered "classic" for GCA, such as headache, scalp tenderness, and constitutional symptoms were not significantly associated with the diagnosis. The negative likelihood ratio (-LR) for an ESR <40 mm/hr was 0.18. CRP and age <70 was less sensitive.

Editor's comments: While no single finding can rule in or rule out GCA, combinations of findings can be helpful in guiding clinical suspicion and patient referral for further work-up. Interestingly, in this series, clinical findings such as claudication were more suggestive than laboratory findings for the diagnosis of GCA. ■

Use of Point-of-Care Ultrasound (POCUS) in Ectopic Pregnancy Diagnosis

Take-home point: The use of POCUS was associated with faster ED treatment and faster time to the OR for ruptured ectopic pregnancies.

Citation: Stone B, Muruganandan K, Tonelli M, et al. Impact of point-of-care ultrasound on treatment time for ectopic pregnancy. *Am J Emerg Med*. 2021;49226–232.

Relevance: Ectopic pregnancy is a highly time-sensitive condition. Urine pregnancy testing and ultrasound at the point-of-care offer an opportunity to expedite this diagnosis and getting the patient to definitive care.

Study summary: This was a retrospective cohort study of patients diagnosed with ectopic pregnancy who underwent operative management in a large urban academic ED in the U.S. The study compared ED treatment time for patients who received POCUS as a part of their ED care compared with radiology-performed ultrasound (RADUS) for women with ectopic pregnancies requiring operative intervention.

Out of 109 patients identified, 73 had RADUS and 36 had POCUS. The mean ED treatment time was significantly faster in the POCUS group (158 minutes vs 206 minutes; p=0.014). Patients in the POCUS group had a significantly faster time to operative management as well (203 minutes vs 293 minutes; p 0.0002).

Editor's comments: This was a retrospective study, and timing was reliant on EMR entries. Patients in the POCUS group more frequently had abnormal vital signs, which may have contributed to shorter time to operative intervention. Additionally, POCUS is highly operator-dependent and it is unclear if the effect of POCUS use on rapidity of ectopic identification can be generalized other EDs.

(For an account of the utility of POCUS in ectopic pregnancy based on an actual urgent care case, read How Useful Is Ultrasound in Diagnosing Extrauterine Gravidities? on page 28.) ■

C diff Detection in Children

Take-home point: *Clostridium difficile* (*C diff*) colonization is highest in children younger than 1 year and decreases thereafter.

Citation: Tougas S, Lodha N, Vandermeer B, et al. Prevalence of detection of *Clostridioides difficile* among asymptomatic children: a systematic review and meta-analysis. *JAMA Pediatr*. 2021 Oct 1;175(10):e212328.

Relevance: The Infectious Disease Society of America (IDSA) advises against routine testing for *C diff* in children younger than 12 months of age due to the extremely high rate of colonization, making results difficult to interpret.

Study summary: This was a systematic review and meta-analysis of studies of *C diff* rates among children from various regions of the world. Children were divided into age <7 days, 7 days–1 month, 1–3 months, 3–6months, 6 months–1 year, 1–2 years, 2–5 years, and >5 years.

The authors found 95 studies involving 19,186 children from 40 countries. They noted prevalence for any *C diff* strain peaked among infants aged 6–12 months (41%), and the lowest prevalence was among children >5 years (12%). The prevalence of *toxigenic C diff* varied less across age groups, peaking among infants aged 6–12 months (14%) and being least prevalent among infants <3 months (3%-6%) and children >5 years (6%).

There was no difference in rates of colonization detected by different testing methods (eg, ELISA vs PCR vs culture).

Editor's comments: Diarrhea is common in children, especially infants. Treatment for *C diff* can be extremely costly and anxiety-provoking. These data lend credence to the recommendation to avoid testing young children for *C diff* unless there is supportive history (eg, prolonged hospitalization, multiple courses of antibiotics). ■

COVID-19 Abstract

COVID-19 Vaccination in the Adolescent Population

Take-home point: The mRNA-1273 (Moderna) vaccine had an acceptable safety profile in adolescents. The immune response was similar to that in young adults, and the vaccine was efficacious in preventing COVID-19.

Citation: Ali K, Berman G, Zhou H, et al. Evaluation of mRNA-1273 SARS-CoV-2 vaccine in adolescents. *N Engl J Med*. 2021;385(24):2241-2251.

Relevance: Vaccinating all individuals is important in the quest for herd immunity against COVID-19.

Study summary: This was an observer-blinded, placebo-controlled evaluation of the safety, immunogenicity, and efficacy of the mRNA-1273 vaccine in adolescents aged 12-17 enrolled at 26 research sites across the United States. Participants were randomly assigned in a 2:1 ratio to receive two injections of either mRNA-1273 vaccine (each injection containing 100 μg, for a total dose of 200 μg) or placebo (saline), 28 days apart.

The authors enrolled a total of 3,732 adolescents who were randomly assigned in a 2:1 ratio to receive mRNA-1273 (2,489 participants) or placebo (1,243 participants). There was a noninferior immune response based on both the geometric mean titer and serologic response in adolescents as compared with that in young adults (18-25 years old). The safety and reactogenicity of mRNA-1273 in adolescents was like that observed in adults. No cases of myocarditis or pericarditis in this trial had been reported at the time of publication.

Editor's comments: This was a pharmaceutical-funded study by Moderna. There was no comparison of efficacy and safety made between the mRNA vaccine used in this study and the other available COVID-19 vaccinations. ■